Partial English Translation of JPA-S63-47104

(Claim 2) A method of manufacturing a honeycomb molding die which includes mold grooves having a cross-section corresponding to that of the honeycomb structure to be molded and a predetermined depth in a direction from the front surface toward the rear surface of the die, and a plurality of open holes independently formed in a direction from the rear surface toward the front surface of the die and connected to the mold grooves, the method comprising the steps of forming a mold part which forms the front surface of the die and is composed of a wear-resistant alloy, into a predetermined shape, forming the mold grooves on the mold part, and forming the plurality of open holes connected to the mold grooves, wherein at least the open holes are formed by electrical discharge machining.

(Embodiment)

Fig. 1 is an explanatory view illustrating a honeycomb molding die according to an embodiment of the present invention. Fig. 1(A) is a plan view, Fig. 1(B) is a longitudinal cross-sectional view taken along line A-A indicated by an arrow illustrated in Fig. 1(A), and Fig. 1(C) is a sectional view taken along line B-B indicated by an arrow illustrated in Fig. 1(B). Fig. 2(A) is a perspective view illustrating an electrode for electrical discharge machining used for forming open holes according to the embodiment illustrated in Fig. 1. Fig. 2B is an explanatory view related to the manufacturing of the electrode for electrical discharge machining illustrated in Fig. 2(A). Fig. 3 illustrates a honeycomb molding die according to another embodiment of the present invention.

According to the embodiment illustrated in Fig. 1, the honeycomb molding

die (hereinafter, referred to as die) for molding a square-shaped honeycomb structure is illustrated. Reference numerals 10, 11, 12, 13, 14, and 15 denote the die, a mold part, a die base, mold grooves, open holes, and through-holes, respectively

The die 10 illustrated in Fig. 1 includes the die base 12 and the mold part 11 composed of a cemented carbide, which are joined together (for example, by a brazing unit). Here, the die base 12 may not need to be composed of a cemented carbide and may be made of a metal such as ordinary steel that is cheap and can be easily obtained. The mold grooves 13 corresponding to the cross-section of the honeycomb structure to be molded and a plurality of the open holes 14, 14, ... connected with the mold grooves 13 are formed at the mold part 11 by electrical discharge machining. According to the embodiment illustrated in Fig. 1, in order to easily manufacture (described later with reference to Fig. 2) the electrode for electrical discharge machining used for forming the open holes 14, the open hole 14 may be allowed to have a square cross-section, and an angle between a direction of the side of the square and the mold groove 13 may be 45 degrees. The through-holes 15, 15, ... are formed at the die base 12 at positions corresponding to the respective open holes 14, 14, ... In addition, according to the embodiment illustrated in Fig. 1, the through-holes 15, 15, ... may be formed into a cylindrical shape so as to be easily formed. According to the embodiment illustrated in Fig. 1, the diameter of the through-hole 15 is set to be slightly smaller than the diagonal length of the open hole 14 as illustrated in Fig. 1(C). However, the diameter of the through-hole 15 may have a value equal to the diagonal length, or the length of the side of the open hole 14.

In the die having the aforementioned construction according to the present invention, the mold grooves 13 and the open holes 14 are formed at the mold part 11 composed of the cemented carbide, so that abrasion of the mold grooves 13 and the

open holes 14 can be practically prevented. For example, abrasion of the through-holes 15 provided to the die base 12 composed of the ordinary steel may naturally occur. However, since the through-holes 15 are connected to the mold grooves 13 through the open holes 14, a little abrasion does not practically affect the molding of the honeycomb structure using the die according to the present invention. When wear of the through-holes 15 appears significantly, only the die base 12 needs to be replaced.